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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,893	11/18/2003	Yasuhiro Iwashita	1248-0680P	2811

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EXAMINER
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CAVALLARI, DANIEL J

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/714,893	<b>Applicant(s)</b> IWASHITA, YASUHIRO	
	<b>Examiner</b> Daniel J. Cavallari	<b>Art Unit</b> 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☒ Claim(s) 12 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/18/03 &amp; 12/8/05</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

The examiner acknowledges a submission of the preliminary amendment filed on 11/18/2003. The changes to the specification, drawings, and amendments to claims 1-3, 5-7, 9, 10 & 13 are accepted.

#### ***Information Disclosure Statement***

The information disclosure statements (IDS) submitted on 11/18/2003 and 12/8/2005 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

### **ABSTRACT**

The abstract of the disclosure is objected to because it is 154 words in length, thereby exceeding the maximum of 150 words. Correction is required. See MPEP § 608.01(b).

#### ***Claim Objections***

Claim 1 is objected to because of the following informalities:

- The use of the word “powers” in the sentence “...to produce secondary electric powers applied from the plurality of secondary windings...” is not typical. The term “power” would be more appropriate.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 6 includes the limitation of a second switch between output lines (quasi-shorting device) located in a non-specified device however such a switch has already been claimed in the “specified secondary circuit” whereas the specification and drawings fail to disclose both secondary side circuits having a switching device disposed in series between there respective outputs.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The use of the term “higher-voltage electric power” is confusing as it is unclear whether the term is referring to a “higher-voltage” or greater “electric power”. The terms

are not synonymous as a higher voltage does not imply greater power or higher power consumption. Further more, it is unclear what is meant by the phrase "higher" power.

The claim will be examined as best understood to mean "higher voltage" in place of "higher-voltage electric power"

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 7, & 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blair (US 6,211,579) & Rozman (US 5,541,828).

In regard to Claim 1

Blair teaches:

- A DC-DC converter (12) with multiple voltage outputs (Vout1- VoutN) (See Figure 1).
- A specified voltage sensor (32) for detecting output voltage from a specified one (Vout2) of the secondary circuits.
- An output limiting section (30) for limiting an electric power output [the power output to Vout1] to at least one non-specified secondary circuit (Vout1) when the specified-voltage sensor (32) section has detected a voltage being equal to a

first predefined value in the specified secondary circuit (Vout2) [Read on by the sensor sensing a voltage drop in the output and controlling the impedance source (30) thereby limiting the output power] (See Column 2, Lines 51-67).

Blair fails to explicitly teach the details of the DC-DC converter, remaining silent in regards to the use of a transformer however states that the converter "may comprise, for example, the converter which is described and illustrated in U.S. Patent No. 5, 541, 828" (See Column 2, Lines 27-31).

Blair teaches a DC-DC converter comprising a primary circuit [read on by the circuit on the primary side of the transformer of Figure 5] which includes a primary winding (np) and a switching device (Q1) (See Figure 5) and a plurality of secondary circuits each including a secondary winding wherein the switching device turning on/off power to the primary winding to produce secondary electric power applied from the secondary windings to the loads (See Figure 5 & Column 2, Lines 50-64 & Column 4, Lines 6-13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the DC-DC converter taught by Rozman into the regulation circuit taught by Blair as suggested by Blair (See Column 2, Lines 27-39). The motivation would have been to provide a converter that is known in the art and in which to supply multiple outputs to the multiple loads taught by Blair and which efficiently utilizes its power transformer (See Rozman Column 1, line 65 to Column 2, Line 11).

In regard to Claims 2

- The specified secondary circuit (Vout2) having a higher voltage than the non-specified secondary circuit (Vout1) (See Column 2, Lines 15-27) in which Blair discloses Vout1 as the “low voltage output” and Vout2 as the “high voltage output”.

Blair fails to explicitly teach the details of the DC-DC converter, thereby remaining silent in regards to the use of a transformer however states that the converter “may comprise, for example, the converter which is described and illustrated in U.S. Patent No. 5, 541, 828” (See Column 2, Lines 27-31).

Blair teaches a DC-DC converter comprising a primary circuit [read on by the circuit on the primary side of the transformer of Figure 5] which includes a primary winding (np) and a switching device (Q1) (See Figure 5) and a plurality of secondary circuits each including a secondary winding wherein the switching device turning on/off power to the primary winding to produce secondary electric power applied from the secondary windings to the loads (See Figure 5 & Column 2, Lines 50-64 & Column 4, Lines 6-13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the DC-DC converter taught by Rozman into the regulation circuit taught by Blair as suggested by Blair (See Column 2, Lines 27-39). The motivation would have been to provide a converter that was known in the art and in which to supply multiple outputs to the multiple loads taught by Blair and which

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efficiently utilizes its power transformer (See Rozman Column 1, line 65 to Column 2, Line 11).

In regard to Claim 7

- A non-specified output voltage sensor (read on by the converter “control circuit”) for detecting an output voltage from the at least one non-specified secondary circuit (Vout1) and a control section (read on by the “pulse width modulator”) of the DC-DC converter (12) controls turning on/off the switching device based on a detection result from the non-specified output voltage sensor section (See Figure 12 & Column 2, Lines 56-60).

In regard to Claim 8

- The specified secondary circuit (Vout2) including an output voltage regulator (20) between the specified voltage sensor (32) and load (LOADN) (See Figure 1 & Column 2, Lines 15-27).

Claim 3, 4, 5, 6, & 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blair & Rozman, & Melse (US 5,933,049).

In regard to Claims 3, 5, 6, & 9

Incorporating all arguments above of the power supply taught by Blair, Blair further teaches:



- The output limiting section including a total power sensor section (control circuit of converter 12) (See Column 2, Lines 56-60) for detecting a value in accordance with a total secondary power (See Column 2, Lines 43-67) [The examiner notes that the signal detected on line 22 is disclosed as being controlled by the sensing circuit (32) which is "in accordance" with a total secondary power ( $V_{out2}-V_{outN}$ ) of all the secondary circuits as it controls the sensing circuit which controls the adjustable impedance (30) which in turn is detected by the converter "control circuit" (not shown) and controls the "pulse width modulator" (not shown) of the DC-DC converter (12) (See Figure 12 & Column 2, Lines 56-60).

Blair fails to teach quasi-short circuiting the output lines of the specified and non-specified secondary side when the specified voltage sensor section has detected the voltage being more than or equal to a first predefined value.

Melse teaches a power supply circuit in which a short circuit switch (10) is used between the secondary winding of a transformer and a load (8) and positioned in series between the output lines of a secondary circuit and controlled in response to a reference voltage in which to control the output to operate at a certain value for powering the load device (See Column 5, Lines 29-38).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the short circuit device (10) into the specified and non-specified secondary side circuits of Blair in which the sensor controls the switch in

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response to a specified voltage being equal to a first predefined value as taught by Melse [The examiner notes the switch is a “quasi-shorting” device as a switch has an inherent resistance value associated with it]. The motivation would have been to provide greater control of the output voltage to sensitive loads.

In regard to Claim 4

Blair teaches the output limiting section including a total power sensor section (“control circuit” of converter 12) (See Column 2, Lines 56-60) for detecting a value in accordance with a total secondary power but fails to explicitly teach whether this circuit senses voltage or current.

Melse explicitly teaches a sensor (9) capable of sensing both current and voltage and comparing it with either a reference current or voltage in order to control a switch (See Column 5, Lines 29-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the current sensor taught by Melse. The motivation would have been to adequately sense the feedback via current by means well known in the art in which to control the circuit.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blair, Rozman, Melse & Ohsawa et al. (US 4,236,198)

Incorporating all arguments above of the power supply system taught by Blair, Blair fails to teach the control section including a latch function which stops driving the switch when the total power is more than or equal to a predefined value.

Ohsawa et al. (hereinafter referred to as Ohsawa) teaches a switching regulator which has a control section with a latch function (read on by holding circuit 21) which stops the driving of the switch device (7) when the detection circuit (17) indicates the total secondary power is more than or equals to a second predefined value (read on by the over current detection on the primary side which is representative of the total power on the secondary side) and which reverts to a previous condition when an electric power is restored (read on by the resetting of the over current detector by the reset circuit 22) (See Figure 3 & Column 4, Line 32 to Column 5, Line 3).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blair & Rozman, Melse, Ohsawa et al. & Tai (US 5,450,308).

Incorporating all arguments above of the power supply system taught by Blair and Melse, Blair and Melse teach a power supply device in which an electronic switch is used in a short circuit section however fails to explicitly teach the switch being a thyristor.

Tai teaches a short circuit device (1) comprising a thyristor (GTO) (See Figure 1 & Column 3, Lines 37-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the thyristor taught by Tai in to the short circuit device of Blair and Melse as it is commonly known in the art to use a thyristor in place of a controllable switch as they are inexpensive, easy to operate, and easily available.

### ***Allowable Subject Matter***

Claims 12 & 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior art fails to teach applying a holding current through a thyristor to produce the quasi-short-circuit through the thyristor even when the load of the specified secondary circuit is shorted out.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Cavallari whose telephone number is (571)272-8541. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571)272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Cavallari

August 17, 2006



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